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SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

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INCOMING CALL FORWARDING COMMUNICATION SYSTEM AND THE METHOD

of which the following is a specification:-

TITLE OF THE INVENTION

INCOMING CALL FORWARDING COMMUNICATION
SYSTEM AND THE METHOD

5 BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an
incoming call forwarding technique in a
communication system including a communication
10 network and a communication terminal.

2. Description of the Related Art

For realizing incoming call forwarding in
a conventional incoming call forwarding system, a
user in a called side registers a call forwarding
15 destination to the system beforehand. When an
incoming call arrives at the user, the incoming call
is automatically forwarded to the call forwarding
destination. When the user wants to change the call
forwarding destination, the user needs to change the
20 registered settings from the called side.

According to the conventional technique,
the incoming call is forwarded according to the call
forwarding destination which is set beforehand. Or,
when the incoming call arrives at a terminal of the
25 user of the called side, the incoming call is
forwarded according to an operation by the user of
the called side.

However, according to the conventional
call forwarding method, a user in a call originating
30 side can not select the call forwarding destination
and a communication mode for the call. Therefore,
there is a problem in that the caller can not select
a call forwarding destination and a method by which
a call is sent to a call incoming side.

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SUMMARY OF THE INVENTION

The object of the present invention is to

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provide a communication system in which a caller can specify a communication mode of a call forwarding destination side by an operation at a caller side.

In addition, an object of the present invention is to provide a communication system in which a call forwarding destination can be selected on the basis of an operation at the caller side.

The above object is achieved by a communication system including a part which communicates with a communication terminal, the communication system including:

a part for receiving a call establishment request from the communication terminal, and sending, to the communication terminal, a call forwarding destination information including information on at least a call forwarding destination; and

a part for receiving information on a call forwarding destination which is selected by a caller from the communication terminal, and allowing the communication terminal and the call forwarding destination to communicate with each other according to the information on the call forwarding destination.

According to this invention, the caller can select a call forwarding destination since the call forwarding destination information is sent to the communication terminal.

The communication system may further include:

a part for establishing a communication mode between the communication system and the communication terminal according to the information on the call forwarding destination.

Accordingly, the communication mode of the communication terminal can be agreed with that of the call forwarding destination.

The communication system may further

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includes:

a part for sending, to the communication terminal, information from which a caller selects a communication mode used for sending the call

5 forwarding destination information to the communication terminal; and

a part for establishing the communication mode selected by the caller between the communication system and the communication terminal,
10 and sending the call forwarding destination information by the communication mode.

According to this invention, the caller can select a communication mode by which the communication terminal receives the call forwarding
15 destination information.

The above object is also achieved by a communication system including a part which communicates with a communication terminal, the communication system including:

20 a part for receiving a call establishment request from the communication terminal, and sending, to the communication terminal, a call forwarding destination information including information on at least a call forwarding destination;

25 a part for receiving information on a call forwarding destination which is selected by a caller from the communication terminal;

a media conversion part for performing media conversion between communication modes of the
30 call forwarding destination and the communication terminal; and

a part for allowing the communication terminal and the call forwarding destination to communicate with each other via the media conversion
35 part.

According to this invention, communication can be performed between different communication

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The communication system may further includes:

a part for establishing the communication
mode selected by the caller between the
communication system and the communication terminal;
10 and

15 In addition, the communication system may
further includes:

wherein the communication system sends the call forwarding destination information to the communication terminal when the call forwarding is available.

Further, in the communication system, the call forwarding destination information may include state information indicating call forwarding is

According to this invention, only necessary information can be sent to the

BRIEF DESCRIPTION OF THE DRAWINGS

Fig.2 is a sequence chart showing an operation of a communication system of the first embodiment of the present invention;

Fig.4 is a sequence chart showing an operation of a communication system of a second embodiment of the present invention;

Fig.6 is a sequence chart showing an
20 operation of a communication system of a third
embodiment of the present invention.

In the following, embodiments of the
25 present invention will be described in detail with
reference to figures.

Fig.1 shows a block diagram of a communication system 1 in the first embodiment of the present invention. The communication system 1 is connected to a communication terminal 2 by radio. The communication system 1 includes a base station 3, a network 4, a service control apparatus 5 and a database 6.

35 The communication terminal 2 is a mobile
wireless terminal which is connected to the network
4 via the base station 3. The communication

terminal 2 can communicate with other terminals by a plurality of communication modes. In addition, the communication system 1 has a normal communication function for allowing a communication terminal to communicate with another terminal by using a subscriber number. The database 6 includes registration information registered by subscribers, and is connected to the service control apparatus 5. The service control apparatus 5 provides various services by referring to the database 6.

Next, an operation of the first embodiment of the present invention will be described with reference to a sequence chart shown in Fig.2.

First, the communication terminal 2 sends a call establishment request which includes a subscriber number of a called party to the service control apparatus 5 in step 1. When the service control apparatus 5 receives the call establishment request, the service control apparatus 5 judges whether there is a setting of call forwarding for a user of the called side in step 2.

When the service control apparatus 5 verifies that there is a setting of call forwarding, the service control apparatus 5 sends a call forwarding destination information request to the database 6 in order to obtain a call forwarding destination information of the user of the called side in step 3.

Next, the database 6 which receives the call forwarding destination information request returns a call forwarding destination information response which includes the call forwarding destination information to the service control apparatus 5 in step 4. The service control apparatus 5 which receives the call forwarding destination information response sends a call forwarding destination information notification

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which includes the call forwarding destination information to the communication terminal 2.

In the following, a concrete example of the call forwarding destination information notification will be described.

As shown in Fig.3, for example, the database stores call forwarding destination information associated with a subscriber number for each subscriber number, in which the call forwarding destination information includes information indicating whether incoming call forwarding is set or not (available or not), service modes, call forwarding destinations and states (ON or OFF). In the above-mentioned step 4, this call forwarding destination information of the corresponding subscriber is sent to the service control apparatus 5, and the caller (subscriber) receives the call forwarding destination information notification in step 5. This notification to the caller is performed by a voice guidance, for example. The whole information or a part of the information can be sent. The part of the information is, for example, only the service modes which have "ON" as the state. "ON" for the state means that the corresponding destination is in "forward available state", and, "OFF" means that the call forwarding destination is in "forward unavailable state".

In step 5 in Fig.2, the communication terminal 2 receives the call forwarding destination information notification. Then, the caller checks the call forwarding destination information and selects a call forwarding destination in step 6. After that, the communication terminal 2 sends a call forwarding destination information notification response including selected call forwarding destination information to the service control apparatus 5 in step 7.

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Next, the service control apparatus 5 sends a call establishment request to the called side (the call forwarding destination) according to the call forwarding destination information notification response in step 8, and the service control apparatus 5 sets a communication mode between the communication terminal 2 and the service control apparatus 5 to conform to the selected communication mode in step 9. That is, the service control apparatus 5 sends a communication mode establishment request to the communication terminal 2, and the communication terminal 2 returns a communication mode establishment response to the service control apparatus 5 in steps 9 and 10.

When the service control apparatus 5 receives a call establishment request completion in step 11, the service control apparatus 5 sends the call establishment request completion to the communication terminal 2 in step 12. After that, communication between the communication terminal 2 and the call destination is started.

(Second Embodiment)

Next, the second embodiment of the present invention will be described.

In the second embodiment, the caller can select a information notification mode for sending the call forwarding destination information from the service control apparatus 5 to the communication terminal 2. In this embodiment, a plurality of notification modes for sending the call forwarding destination information are registered in the service control apparatus 5 and the like beforehand. The system configuration of the second embodiment is the same as that of the first embodiment.

In the following, an operation of the communication system according to the second embodiment will be described with reference to a

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sequence chart shown in Fig.4.

First, the communication terminal 2 sends a call establishment request to the service control apparatus 5 in step 21. When the service control apparatus 5 receives the call establishment request, the service control apparatus 5 judges whether there is a setting of call forwarding for the user of the called side in step 22.

When the service control apparatus 5 judges that there is a setting of call forwarding for the user of the called side, the service control apparatus 5 checks that a plurality of modes are registered as the notification modes for sending information to the communication terminal 2. Then, the service control apparatus 5 sends an information notification mode request to the communication terminal in step 23. When a caller recognizes the information notification mode request, the caller selects an information notification mode in step 24 and the communication terminal sends an information notification mode response to the service control apparatus 5 in step 25. For example, the caller can select a notification mode by selecting character information in response to a voice guidance from the service control apparatus 5.

Next, the service control apparatus 5 sends a communication mode establishment request to the communication terminal 2 in step 26 for making or changing communication settings such that the selected communication mode is realized. Then, the communication terminal 2 returns a communication mode establishment response to the service control apparatus 5 in step 27 and changes an output form for outputting information to the caller in step 28.

Next, the service control apparatus 5 sends a call forwarding destination information request to the database 6 in step 29 in order to

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sequence chart shown in Fig.6.

First, the communication terminal 2 sends a call establishment request to the service control apparatus 5 in step 41. When the service control apparatus 5 receives the call establishment request, the service control apparatus 5 judges whether there is a setting of call forwarding for a user of the called side in step 42.

When the service control apparatus 5 verifies that there is a setting of call forwarding, the service control apparatus 5 sends a call forwarding destination information request to the database 6 in order to obtain call forwarding destination information in step 43. After the step 41 is performed, like the second embodiment, the system may allow the caller to select an information notification mode.

Next, the database 6 which receives the call forwarding destination information request returns a call forwarding destination information response which includes call forwarding destination information to the service control apparatus 5 in step 44. The service control apparatus 5 which receives the call forwarding destination information response sends a call forwarding destination information notification which includes call forwarding destination information to the communication terminal 2 in step 45.

In step 45, the communication terminal 2 receives the call forwarding destination information notification. Then, the caller checks the call forwarding destination information and selects a call forwarding destination by operating the communication terminal 2 in step 46. After that, the communication terminal 2 sends a call forwarding destination information notification response including the selected call forwarding destination

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information to the service control apparatus 5 in step 47.

Next, when the communication mode of the call forwarding destination side which is indicated by the call forwarding destination information notification response is different from that of the caller, the service control apparatus 5 sends an activation request including conversion information used for performing medium conversion to the medium conversion apparatus 7 in step 48.

The medium conversion apparatus 7 which receives the activation request activates the conversion function on the basis of the conversion information in step 49, and returns an activation completion message to the service control apparatus in step 50. Then, the service control apparatus 5 returns a call establishment request completion to the communication terminal 2 in step 51. Accordingly, communication starts via the medium conversion apparatus 7.

When the caller selects an information notification method like the second embodiment after step 41, communication can be performed between the selected communication mode of the caller and the communication mode of call forwarding destination via the medium conversion apparatus 7.

In addition, by providing a plurality of medium conversion apparatuses, the most suitable medium conversion apparatus can be selected according to the kind of medium conversion so that communication can be performed via the selected medium conversion apparatus.

As a concrete example, when the caller uses a voice terminal and a called side (a call forwarding destination) uses a character terminal, the medium conversion apparatus 7 performs voice/text conversion. In addition, when the call

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forwarding destination terminal uses e-mail which
can be placed off-line, the medium conversion
apparatus 7 may convert and store necessary
information sent from the caller. After that, the
medium conversion apparatus 7 may transfer the
information to a mail server and the like.

Although examples in which the present invention is applied to a mobile wireless communication have been described, the present invention can be applied to other communication systems by providing apparatuses which correspond to the service control apparatus, the database and the medium conversion apparatus.

As mentioned above, according to the
15 present invention, since call forwarding destination
information which is registered beforehand is sent
to a calling side, the caller can select a call
forwarding destination and a communication mode.

The present invention is not limited to
20 the specifically disclosed embodiments, and
variations and modifications may be made without
departing from the scope of the invention.

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